nce Library

OCT 11 1949

VOLUME 24 NUMBER 4

STAIN TECHNOLOGY

A JOURNAL FOR MICROTECHNIC

OFFICIAL ORGAN OF BIOLOGICAL STAIN COMMISSION

OCTOBER 1949

CONTENTS

ORIGINAL ARTICLES

The Demonstration of a New Nerve-Cell Organoid. OWEN LEWIS THOMAS 201
Thiazin Dyes in Supravital Staining of Nerve Fibers. RICHARD E. HELLER, GRIER F. STARR, and H. A. DAVENPORT 207
A Method for Demonstrating the Presence of Alkaline Phosphatase and Glycogen in the Same Section. B. F. MARTIN 215
Combination of Certain Fluorane Derivitive Dyes with Bacterial Cells at Different Hydrogen ion Concentrations. J. O. HARRIS 217
A Simplified Method for the Double Embedding of Tissue. THERESA M. BANNY and GEORGE CLARK 223
A Five-Hour Variant of Gomori's Methenamine Silver Method for Argentaffin Cells. H. JACQUIER BURTNER and R. D. LILLIE 225
Whole Mounts of Flat and Round Worms for Morphological Studies. C. M. S. DASS 229
Staining of Plant Materials Cleared in NaOH. THOMAS MORLEY 231
Deterioration of Schiff's Reagent. JOHN F. LHOTKA and H. A. DAVENPORT 237
Mounting Media for Phase Microscope Specimens. GERMAIN C. CROSSMON 241

Notes on Technic:

A Suggestion for Prevention of Loose Sections in the Bodian Protargol Method. HELEN DAVIES and PINCKNEY J. HARMAN 249
The Differential Staining of Amphibian Yolk Granules. IRA J. LAUFER 249

LABORATORY HINTS FROM THE LITERATURE

Microscope and Other Apparatus 251
Dyes and Their Biological Uses 251
Animal Microtechnic 251
Plant Microtechnic 252
Microörganisms 252
Histochemistry 254

Contains Title Page, Table of Contents and Index to Volume 24

Published by
BIOTECH PUBLICATIONS, Geneva, N. Y.

Entered as second class matter at the Post Office, Geneva, N. Y.

STAIN TECHNOLOGY

A JOURNAL FOR MICROTECHNIC

ISSUED QUARTERLY

SUBSCRIPTION PRICE $4.50 PER YEAR (U. S. CURRENCY)

Editor and Business Manager, H. J. CONN, Geneva, N. Y.
Assistant Editor, JEAN E. CONN, Middletown, Ct.

Consulting Editors

ABSTRACTS: G. H. CHAPMAN, New York, N. Y.
ZOOLOGY: S. I. KORNHAUSER, School of Medicine, Univ. of Louisville
PATHOLOGY: R. D. LILLIE, National Inst. of Health
BOTANY: CONWAY ZIRKLE, Univ. of Pennsylvania

Publication Committee of Biological Stain Commission

LOUIS GERSHENFELD, Chairman; H. A. DAVENPORT; E. H. STOTZ

SUGGESTIONS TO AUTHORS SUBMITTING MANUSCRIPT

Address all correspondence regarding manuscripts for publication, proofs, etc. to H. J. Conn, Box 269, Geneva, N. Y.

Articles dealing with microscopic technic, or with the nature or uses of biological stains are suitable for publication in STAIN TECHNOLOGY. It is understood that articles submitted have not appeared previously elsewhere and that they will not be offered for simultaneous appearance in other publications without the consent of the editor of STAIN TECHNOLOGY.

Articles over two printed pages in length (i. e. about 800 words) must be preceded by a brief summary (100–400 words) which must be complete in itself and contain all the important facts brought out in the paper. When possible the abstract should summarize the new methods in such form that a reader can follow the directions without consulting the body of the paper.

All staining formulae must be definite and accurate. The batch or certification number of the stains actually used by the author in such formulae should be included for reference purposes. In case of uncertified stains, not designated by any batch number, one should give as much information as available, i. e. name of manufacturer, approximate date of purchase, etc.

In general all copy should be typewritten, either double or triple spaced; although complicated material such as long tables is acceptable if written or printed legibly by hand. Legends for tables should be complete in themselves, so as to make the table intelligible to anyone studying it, without consulting the text of the article. All references to literature must be carefully verified and ordinarily the complete title and reference should be given

All illustrations should accompany the manuscript and should be numbered, with the legend for each written on separate paper and attached loosely to the illustration. They should always be referred to in the text. *Colored illustrations are accepted only at the author's expense.*

THE BIOLOGICAL STAIN COMMISSION

The Stain Commission is a coöperative non-profit organization incorporated under the University of the State of New York. It has official connection with several scientific societies, and several of its Trustees represent these societies, as follows:

H. J. Conn, (*President*) - - - Society of American Bacteriologists
H. A. Davenport - - - - American Association of Anatomists
Edward W. Dempsey - - Society of Experimental Biology and Medicine
Louis Gershenfeld - - - American Pharmaceutical Association
F. H. Figge - - - - - - American Society of Zoologists
R. D. Lillie - American Association of Pathologists and Bacteriologists
E. H. Stotz, (*Treasurer*) - - - - American Chemical Society
E. K. Kline - - - - - - American Public Health Association
S. I. Kornhauser, (*Secretary*), W. F. Windle, (*Vice-President*), and Conway Zirkle - - - - - - - - Trustees at large

The objects of this Commission are to improve the quality and to increase the reliability of the biological stains on the market; also to stimulate research concerning stains and their biological uses. The Commission does not manufacture or sell stains, but coöperates with the manufacturers. The manufacturers are urged to submit a sample of each batch of any stain to the Commission for testing before it is put on the market. Any batch thus tested and found satisfactory may then be sold by stain dealers under the Commission certification.

At present over fifty stains have been put on the certification basis. Certification on one or more of these stains has been issued to each of the following manufacturers and standardizers of biological stains:

Anachemia, Ltd. - - - - - - 509 McGill St., Montreal 1, Que.
City Chemical Corp. - - - - 132 West 22nd St., New York 11, N. Y.
Coleman and Bell - - - - - - - - - - Norwood, Ohio
Difco Laboratories - - - - - - - - - Detroit 1, Michigan
Gradwohl Laboratories - - - - 3514 Lucas Avenue, St. Louis 3, Mo.
Hartman-Leddon Co. - - - 5819–21 Market St., Philadelphia 39, Pa.
Paul Lewis Laboratories - - - - 918 N. 4th St., Milwaukee 3, Wisconsin
National Aniline - - - - - 40 Rector St., New York 6, N. Y.
Physicians' Drug & Supply Co., Third and Callowhill Streets, Philadelphia 6, Pa.

Stains may be obtained from one of these companies direct, or may be secured thru one of the dealers in general laboratory supplies. In the latter case, be sure to specify Commission certified stains.

CERTIFIED STAINS

The following stains have now been put on a certification basis by the Biological Stain Commission:

Alizarin red S
Anilin blue, water soluble
Auramine O
Azocarmine G
Azure A
Azure B
Azure C
Bismarck brown Y
Brilliant cresyl blue
Brilliant green
Carmine
Chlorazol black E
Congo red
Cresyl violet
Crystal violet
Eosin, bluish
Eosin, yellowish
Erythrosin B
Ethyl eosin
Fast green FCF
Fuchsin, acid
Fuchsin, basic
Giemsa stain
Hematoxylin
Indigo carmine
Janus green B
Jenner's stain
Light green, S. F., yellowish
Malachite green
Methyl green
Methyl orange
Methyl violet 2 B
Methylene blue chloride
Methylene blue thiocyanate
Methylene violet
Neutral red
Nigrosin
Nile blue A
Orange G
Orange II
Orcein
Phloxine
Pyronin B
Resazurin
Rose bengal
Safranin O
Sudan III
Sudan IV
Sudan black B
Tetrachrome stain (MacNeal)
Thionin
Toluidine blue O
Wright stain

STAINING PROCEDURES

This publication, sponsored by the Biological Stain Commission, is a loose-leaf laboratory hand-book, consisting of 10 leaflets, the prices of which, if purchased separately, are as follows:

Introductory: General Methods	30c
IA. Animal Histology: General tissue	30c
IB. Animal histology: Connective and elastic tissue	30c
IC. Animal histology: Nervous tissue	40c
ID. Animal histology: Blood, Bone, Fat	30c
IIA. Plant Microtechnic	30c
IIB. Plant Cytology	30c
IIIA. Microörganisms: In smears	30c
IIIB. Microörganisms: In sections	30c
Index	30c

The methods given in these various leaflets are those now in actual use in the laboratories of the members of the Stain Commission. A uniform method of presenting the procedures has been adopted throughout the publication, and all formulae are expressed in a standardized form. No method is to be included in Staining Procedures until it has been submitted to the general membership of the Commission, giving everyone familiar with the sort of work for which the method is intended a chance to check it over carefully. In this way, the procedures have the endorsement of a considerable body of biologists behind them. The leaflets are kept up to date by periodical revision.

The leaflets may be ordered individually at the above prices, or may be ordered any four at a time for $1.00. Advance payments of $1.00 are receivable, for which the next four leaflets revised will be sent (or the next three, provided changes in cost of printing make it impossible to maintain present prices.)

The entire ten leaflets, with a paper cover sell for $2.50 postpaid, ($2.25 if cash accompanies order); with ring-book cover $4.25 (cash price $4.00).

BIOTECH PUBLICATIONS

Box 269 **Geneva, N. Y.**

PUBLISHED IN APRIL 1946

BIOLOGICAL STAINS

5th Edition

By H. J. CONN

The 4th edition of this book was out of print some time, and the publication of the 5th was delayed beyond all expectation, owing to the difficult conditions of recent years.

The object and scope of this book on dyes used in biological staining is so well known to those who will see this announcement that it hardly needs to be repeated here. It is enough to say that in preparing the 5th edition the book has been largely rewritten. More changes have been made than in any previous revision except in preparing the 2nd edition.

The period between the 4th and 5th editions has seen the introduction of quite a number of new dyes into microscopic work, notably in fluorescent microscopy. As a result of such developments, about 25 more dyes are included in the new edition than in the previous one. The 5th edition is about 40 pages longer than the 4th, although because of lighter weight paper it is no more bulky. It still remains a convenient size handbook for use in the laboratory.

Price $4.25

(If cash accompanies order: $3.75)

BIOTECH PUBLICATIONS

Lock box 269 Geneva, N. Y.

HISTORY OF STAINING

2nd EDITION

By H. J. CONN and Collaborators

The first edition of this book, which was published in 1933, has been out of print for over a year.

The changes made in this edition are not extensive, but involve the complete rewriting of the first chapter, to make it conform with present ideas. Recent research by J. R. Baker and F. T. Lewis has brought to light earlier instances of histological staining than those mentioned in the first edition of this book, and it has required considerable revision of the first chapter to include reference to this earlier work.

Extensive changes have been made in the chapter dealing with vital staining. There has also been added a biographical note and portrait of one of the other early leaders in this field, Dr. F. B. Mallory, who has died since the date of the first edition of this book.

Price: $3.00, postage additional; or $2.75, postpaid, if cash accompanies order.

BIOTECH PUBLICATIONS

Box 269 Geneva, N. Y.

MANUAL
OF METHODS FOR
PURE CULTURE STUDY OF BACTERIA

A loose-leaf laboratory guide published by the

SOCIETY OF AMERICAN BACTERIOLOGISTS

Owners of the MANUAL who subscribe to PURE CULTURE STUDY OF BACTERIA ($1.25 per year) receive from time to time revisions of the leaflets and in that way keep their Manual up to date.

PRICES

Manual complete, in imitation leather cover.....$4.00
(or $3.50 if cash accompanies order)
Manual complete, in paper cover.....$2.00
per ten.....$17.50
(cash price: $1.50 each, $13.00 per ten)
Single leaflets each.....$ .25

DESCRIPTIVE CHART

SOCIETY OF AMERICAN BACTERIOLOGISTS
FOR THE PURE CULTURE STUDY OF BACTERIA

Standard: 2½¢ each; $2.00 per hundred; $15.00 per thousand, plus postage (or 2¢ each; $1.50 per hundred; $12.00 per thousand, postpaid, if cash accompanies order).

Instruction: 2¢ each; $1.75 per hundred; $13.50 per thousand, plus postage (or 1.8¢ each; $1.25 per hundred; $11.00 per thousand, postpaid, if cash accompanies order).

STAIN TECHNOLOGY

BACK NUMBERS AVAILABLE AT THE FOLLOWING RATES:

Volumes 1, 8, 9, 10, 11, 12, and 19	$4.00 each
Volumes 3, 4, 18, and 24	3.00 each
Other volumes	2.25 each
Twenty-year index	1.50
Volumes 1–24, including 20-year index	71.00
(if cash accompanies order	67.00)

The present subscription rate to STAIN TECHNOLOGY is $4.50 a year

For sale by

BIOTECH PUBLICATIONS

Care H. J. CONN, Box 269, Geneva, N. Y.

Publications of The Wistar Institute

JOURNAL OF MORPHOLOGY. Devoted to the publication of original research on animal morphology and physiology, including cytology, protozoology, and the embryology of vertebrates and invertebrates.

Bimonthly, 2 vols. annually: $20.00 Domestic, $21.00 Foreign, per year.

THE JOURNAL OF COMPARATIVE NEUROLOGY. Publishes the results of original investigations on the comparative anatomy and physiology of the nervous system.

Bimonthly, 2 vols. annually: $15.00 Domestic, $16.00 Foreign, per year.

THE AMERICAN JOURNAL OF ANATOMY. Publishes the results of comprehensive investigations in vertebrate anatomy—descriptive, analytical, experimental.

Bimonthly, 2 vols. annually: $15.00 Domestic, $16.00 Foreign, per year.

THE ANATOMICAL RECORD. For the prompt publication of concise original articles on vertebrate anatomy, preliminary reports; technical notes; critical notes of interest to anatomists and short reviews of noteworthy publications.

Monthly, 3 vols. annually: $22.50 Domestic, $24.00 Foreign, per year.

THE JOURNAL OF EXPERIMENTAL ZOOLOGY. Publishes papers embodying the results of original researches of an experimental or analytical nature in the field of zoology.

Nine times a year, 3 vols. annually: $22.50 Domestic, $24.00 Foreign, per year.

AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY. Publishes original articles on comparative human morphology and physiology as well as on the history of this branch of science and the techniques used therein. In addition it gives comprehensive books reviews, an annual bibliography, and informal communications.

Quarterly, 1 vol. annually: $7.50 Domestic, $8.00 Foreign, per year.

JOURNAL OF CELLULAR AND COMPARATIVE PHYSIOLOGY. Publishes papers which embody the results of original research of a quantitative or analytical nature in general and comparative physiology, including both their physical and chemical aspects.

Bimonthly, 2 vols. annually: $15.00 Domestic, $16.00 Foreign, per year.

THE JOURNAL OF NUTRITION. Publishes original researches in the field of nutrition and occasional reviews of literature on topics with which the journal is concerned.

Monthly, 3 vols. annually: $22.50 Domestic, $24.00 Foreign, per year.

THE AMERICAN ANATOMICAL MEMOIRS. Publishes original monographs based on experimental or descriptive investigations in the field of anatomy which are too extensive to appear in the current periodicals. Each number contains only one monograph. List of monographs already published, with prices, sent on application.

ADVANCE ABSTRACT CARD SERVICE

Every paper accepted for publication in one of the above periodicals is accompanied by the author's abstract. The abstract and subject classifications are printed on the face of a standard library catalogue card. This Advance Abstract Card Service is offered in three styles.

Prices per year $2.00, $2.50 and $3.00, postpaid.

The Wistar Institute of Anatomy and Biology

WOODLAND AVENUE AND THIRTY-SIXTH STREET, PHILADELPHIA 4, PA.

DIRECTIONS FOR PREPARING
ANDRADE INDICATOR

Dissolve 0.2 gms in 100cc. of water. Neutralize by adding .....cc. of normal NaOH. Allow solution to stand till straw colored. Use 10cc. per liter of medium.

C. I. No. 692 **ACID FUCHSIN** ..... Gm
(RUBINE S)

Certified for use in: **Histology, Andrade Indicator**

Total Dye Content ..... %

Pharmaceutical Laboratories
NATIONAL ANILINE DIVISION
40 RECTOR STREET • • ALLIED CHEMICAL & DYE CORPORATION • • NEW YORK 6, N. Y., U.S.A.

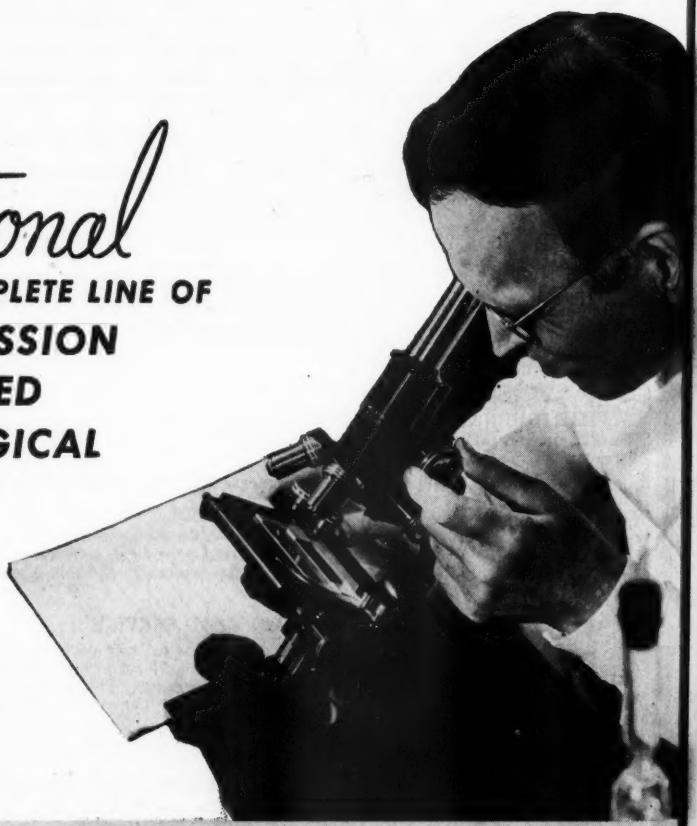
Found satisfactory by BIOLOGICAL STAIN COMMISSION for above-mentioned purposes. *This does not imply approval for any medicinal use.* Will users please report any unsatisfactory results to *H. J. Conn*, Geneva, N. Y.

Certification No. NB

ACID FUCHSIN **is used extensively in both Van Gieson's connective tissue stain as well as in Mallory's aniline blue collagen stain.**

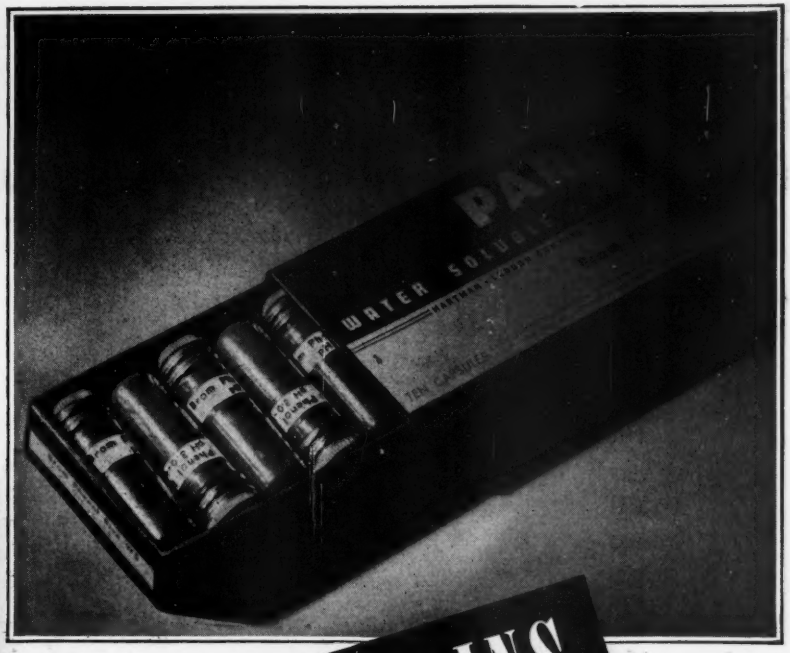
National

THE COMPLETE LINE OF
COMMISSION CERTIFIED BIOLOGICAL STAINS



NATIONAL ANILINES PHARMACEUTICALS

Pharmaceutical Laboratories
NATIONAL ANILINE DIVISION
40 RECTOR STREET • • ALLIED CHEMICAL & DYE CORPORATION • • NEW YORK 6, N. Y., U.S.A.



PARSTAINS

Known favorably in many laboratories.

They incorporate features of standardization and convenience not available in bottle packaging.

They include BIOLOGICAL STAINS, BUFFER SALT MIXTURES, and pH INDICATORS (both free acids and the *new* Water Soluble type).

Write for the new PARSTAINS catalog.

HARTMAN-LEDDON COMPANY

Producers HARLECO *Specialties*

5821 MARKET ST. PHILADELPHIA 39, PENNA.

Biological Stains

DURING the past thirty years The Coleman & Bell Company has developed processes for the preparation and purification of several hundred dyes for use as biological stains.

These products are prepared in our laboratories on a semi-commercial scale. In connection with their manufacture and purification, we have developed a testing laboratory equipped for testing the purity of these products both chemically and biologically. Most of the common stains are offered with the Certificate of the Biological Stain Commission.

C & B Products are distributed by Laboratory and Physician Supply Houses Throughout the World

Write for Copy of Our Catalog

The Coleman & Bell Co., Inc., Manufacturing Chemists : Norwood, Ohio, U.S.A.

COLEMAN & BELL